

**CLAIM AMENDMENTS**

Please amend the claims as set forth in the following listing of claims:

**I CLAIM:**

1. (Original) A biochip, comprising a substrate defining a plurality of fluid holding areas, there being fluid separating means for preventing mixing of fluids held in said areas until the application of pressure to one or more said fluid, characterised in that the biochip comprises at least a first substance in a first fluid holding area, said first substance being in a substantially inactive or dormant condition, and a second molecule capable of activating the first substance in a second fluid holding area, the first and second fluid holding areas being separated by said fluid separating means.
2. (Original) A biochip according to claim 1, further including means for applying pressure to the one or more fluid.
3. (Original) A biochip according to claim 2, the means for applying pressure comprising at least one expandible element, the arrangement being such that expansion of the or each expandible element results in the application of pressure to the one or more fluid.
4. (Currently Amended) A biochip according to claim 3, wherein the expandible element is expandible upon application of light thereto at a suitable wavelength to cause heating of the example expandible element.
5. (Currently Amended) A biochip according to ~~any preceding~~ claim 1, wherein the or each separating element means comprises a frangible membrane or film.
6. (Original) A biochip according to claim 5, the membrane or film comprising a polymer.

7. (Original) A biochip according to claim 6, the polymer comprising nitrocellulose, polyethylene, or polypropylene.

8. (Currently Amended) A biochip according to claim 1 ~~any of claims 1 to 4~~, wherein the or each separating element means comprises a fluid.

9. (Original) A biochip according to claim 8, wherein the fluid comprises mineral oil, vegetable oil, or paraffin.

10. (Original) A biochip according to claim 8, wherein the fluid comprises a metal which is liquid at room temperature.

11. (Original) A biochip according to claim 10, wherein the metal comprises mercury or Galestan.

12. (Currently Amended) A biochip according to claim 3 ~~any of claims 3 to 11~~, wherein the expandible element is a liquid.

13. (Currently Amended)) A biochip according to claim 3 ~~any of claims 3 to 11~~, wherein the expandible element comprises an aqueous suspension of activated charcoal, a colloidal suspension, glycerol, oil, a gel or a polymer.

14. (Currently Amended)) A biochip according to ~~any preceding~~ claim 1, further including a micro-organism in one a first of said fluid holding areas, the micro-organism being in a substantially inactive or dormant condition, and a fluid in a second of said fluid holding areas in fluid communication with the first of said fluid holding areas and separated therefrom by a said separating element means, the fluid being adapted to reactivate the micro-organism.

15. (Original) A biochip according to claim 14, wherein the micro-organism is a bacterium.

16. (Original) A biochip according to claim 14, wherein the micro-organism is a fungus.

17. (Original) A biochip according to claim 16, wherein the fungus has been bio-engineered to luminesce or fluoresce in the presence of a pre-selected analyte, such that the luminescence or fluorescence output varies in response to the presence or absence of the analyte, the fluid in the second said area comprising the analyte.

18. (Currently Amended) A biochip according to claim 14 any of claims 14 to 17, wherein the reactivating fluid comprises or includes water.

19. (Currently Amended) A biochip according to claim 14 any of claims 14 to 17, wherein the reactivating fluid comprises or includes a mixture of water and nutrients required to stimulate activation/germination and growth of the micro-organism.

20. (Currently Amended) A biochip according to claim 14 any of claims 14 to 19, wherein the micro-organism is disposed in a hydratable matrix.

21. (Original) A biochip according to claim 20, the matrix comprising an acrylamide based polymer or hydrogel, or a filter paper.

22. (Currently Amended) A biochip according to claim 1 any of claims 1 to 13, further including a protein or nucleic acid in one of said fluid holding areas, said protein or nucleic acid being in a form requiring activation.

23. (Original) A biochip according to claim 22, wherein the protein is an enzyme requiring the presence of a co-factor or substrate for activity.

24. (Currently Amended) A biochip according to any preceding claim 1, further comprising a cover disposed at its upper (in use) surface, the cover comprising one or more

perforation.

25. (Original) A biochip according to claim 24, the cover comprising filter paper.

26. (Original) A biochip according to claim 24, the cover comprising a dialysis membrane, or a perforated film.

27. (Original) A biochip according to claim 24, the cover comprising a self-sealing membrane comprising silicone, latex or rubber.

28. (Currently Amended) A biochip according to ~~any preceding~~ claim 1, including a lower (in use) surface comprising of a transparent material.

29. (Original) A biochip according to claim 28, the lower (in use) surface comprising a glass, polycarbonate or polystyrene.

30. (Currently Amended) A biochip according to ~~any preceding~~ claim 1, wherein the substrate comprises silicon.

31. (Currently Amended) A biochip according to ~~any preceding~~ claim 1, comprising three fluid holding areas, a first containing a sample of cells, a second containing a fluorescent dye or probe, and a third containing a fixative, the areas being in fluid communication and separated from one another by separating elements.

32. (Currently Amended) A biochip according to claim 1 ~~any of claims 1 to 29~~, comprising four fluid holding areas, a first containing a sample of cells, a second containing a growth medium, a third containing a substrate, fluorescent dye or probe, and a fourth containing an unknown test substance, the areas being in fluid communication and separated from one another by separating elements.

33. (Currently Amended) A method of fluid transfer in a biochip according to claim 1 ~~any of claims 1 to 32~~, comprising the application of light to a portion of the biochip.

34. (Original) A method according to claim 33, wherein the light is laser light.

35. (Currently Amended) A method according to claim 33 or ~~claim 34~~, wherein the light is applied to an expandible element, the light being adapted to cause heating of the expandible element which in turn causes displacement of the liquid.

36. (Currently Amended) A method according to claim 33 ~~any of claims 33 to 35~~, carried out on a biochip as claimed in claim 1 ~~any of claims 1 to 31~~.

37. (Original) A method according to claim 36, including the step of selectively activating fluid holding areas to achieve mixing of fluids.

38. (Original) A method according to claim 36, including the step of varying the power of the laser to regulate the volume and/or velocity of fluid transfer.